PATENT
Customer No. 22,852
Attorney Docket No. 7414.0054-00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue Application of:	)	
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Tor SLETTNES	)	Group Art Unit: Not Yet Assigned
	)	
Original Patent No.: 6,040,586	)	Examiner: Not Yet Assigned
	)	
Original Patent Issue Date: March 21, 2000	)	
	)	
Reissue Filed: February 14, 2002	)	
	)	
For: METHOD AND SYSTEM FOR VELOCITY-NORMALIZED POSITION-BASED SCANNING	)	

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Prior to the examination of the above reissue application, please amend this application as follows:

IN THE CLAIMS:

Please replace, without prejudice or disclaimer, claims 9 and 17 with amended claims 9 and 17 as follows:

9. (Amended) The method of claim 6 wherein [the lane density of] the multilane electrophoresis system [is] has a lane density of at least 1.8 mm/lane.

17. (Amended) An apparatus for scanning a scan window having one or more channels comprising:

an integrating detector;

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a scanner for effecting a scanning of the integrating detector relative to a scan window comprising one or more channels, wherein an integrated signal (S) is detected by scanning the integrating detector relative to the scan window; and

a computer for receiving the integrated signal S and for determining a scan velocity and for calculating a velocity-normalized integrated signal (Sn).

Please add new claims 26 through 65 as follows:

26. An apparatus for scanning one or more channels comprising:

means for detecting an integrated signal (S) across a scan window comprising one or more channels using an integrating detector; and

computer means for receiving the integrated signal S and determining a scan velocity and for calculating a velocity-normalized integrated signal (Sn) as a function of the scan velocity and the integrated signal S.

27. The apparatus according to claim 26, further comprising the integrating detector.

28. The method of claim 1, further comprising determining an integration time (ti) for the integrated signal; and

wherein the calculating the velocity-normalized integrated signal comprises dividing the integrated signal (S) by the integration time (ti),

and wherein the scan window comprises more than one channel.

29. The method of claim 28, wherein determining the integration time (ti) comprises determining a start time (ts) at a start of the detecting the integrated signal; determining an end time (te) at an end of the detecting the integrated signal; and determining the integration time (ti) as a difference of the end time (te) and the start time (ts).

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30. The method of claim 29, wherein the integrating detector comprises at least one of a CCD and a photodiode array.

31. A data collection method for scanning a scan window comprising:

detecting an integrated signal (S) across a scan window comprising one or more channels using an integrating detector;

determining an integration time (ti) for the integrated signal; and

calculating a velocity-normalized integrated signal (Sn), the calculating comprising dividing the integrated signal (S) by the integration time (ti).

32. The method of claim 31, wherein determining the integration time (ti) comprises determining a start time (ts) at a start of the detecting the integrated signal; determining an end time (te) at an end of the detecting the integrated signal; and determining the integration time (ti) as a difference of the end time (te) and the start time (ts).

33. The method of claim 32, further comprising determining a detector offset (So); determining an offset adjusted unnormalized signal as the difference (S - So); and wherein the calculating the velocity-normalized integrated signal (Sn) comprises dividing the offset adjusted unnormalized signal by the integration time (ti).

34. The method of claim 33, wherein determining the offset adjusted unnormalized signal further comprises multiplying the difference (S - So) by a scaling factor (tn).

35. The method of claim 32, wherein the channels are disposed in a linear array.

36. The method of claim 32, wherein the channels comprise lanes in a multilane electrophoresis system.

37. The method of claim 36, wherein the lanes are located in a slab gel.

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38. The method of claim 36, wherein the lanes are located in isolated electrophoresis channels.

39. The method of claim 36, wherein the multilane electrophoresis system has a lane density of at least 1.8 mm/lane.

40. The method of claim 32, wherein detecting the integrated signal comprises using a stepper motor to cause a relative motion between the scan window and the integrating detector.

41. The method of claim 40, wherein a position sensor is used to define a home position for initializing the stepper motor.

42. The method of claim 32, wherein the integrating detector comprises at least one of a CCD and a photodiode array.

43. The method of claim 32, wherein the integrated signal results from detection of a fluorescence emission.

44. The method of claim 43, wherein the fluorescence emission is stimulated by a laser.

45. The apparatus of claim 16, further comprising means for determining an integration time (ti) for the integrated signal; and wherein the calculating the velocity-normalized signal comprises dividing the integrated signal (S) by the integration time (ti).

46. The apparatus of claim 45, wherein determining the integration time (ti) comprises determining a start time (ts) at a start of the detecting the integrated signal; determining an end time (te) at an end of the detecting the integrated signal; and determining the integration time (ti) as a difference of the end time (te) and the start time (ts).

47. The apparatus of claim 46, further comprising the integrating detector.

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48. An apparatus for scanning one or more channels comprising:

means for detecting an integrated signal (S) across a scan window comprising one or more channels using an integrating detector;

means for determining an integration time (ti) for the integrated signal; and

computer means for receiving the integrated signal (S) and the integration time (ti), and for determining a velocity-normalized integrated signal (Sn), the determining comprising dividing the integrated signal (S) by the integration time (ti).

49. The apparatus of claim 48, wherein determining the integration time (ti) comprises determining a start time (ts) at a start of the detecting the integrated signal; determining an end time (te) at an end of the detecting the integrated signal; and determining the integration time (ti) as a difference of the end time (te) and the start time (ts).

50. The apparatus of claim 49, wherein the computer means comprises the means for determining the integration time (ti).

51. The apparatus of claim 49, further comprising the integrating detector.

52. The apparatus of claim 17, further comprising a timer configured to determine an integration time (ti) for the integrated signal; and wherein the calculating the velocity-normalized signal comprises dividing the integrated signal (S) by the integration time (ti), and the scan window comprises more than one channel.

53. The apparatus of claim 52, wherein determining the integration time (ti) comprises determining a start time (ts) at a start of the detecting the integrated signal; determining an end time (te) at an end of the detecting the integrated signal; and determining the integration time (ti) as a difference of the end time (te) and the start time (ts).

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54. An apparatus for scanning a scan window having one or more channels comprising:

an integrating detector;

a scanner configured to scan the integrating detector relative to the scan window, wherein an integrated signal (S) is detected by scanning the integrating detector relative to the scan window;

a timer configured to determine an integration time (ti) for the integrated signal; and

a computer configured to receive the integrated signal (S) and the integration time (ti), and to determine a velocity-normalized integrated signal (Sn), the determining comprising dividing the integrated signal (S) by the integration time (ti).

55. The apparatus of claim 54, wherein determining the integration time (ti) comprises determining a start time (ts) at a start of the detecting the integrated signal; determining an end time (te) at an end of the detecting the integrated signal; and determining the integration time (ti) as a difference of the end time (te) and the start time (ts).

56. The apparatus of claim 55, wherein the computer is configured to determine the integration time (ti).

57. The apparatus of claim 55, wherein the integrating detector comprises a charged coupled device.

58. The apparatus of claim 55, wherein the scanner comprises a stepper motor.

59. The apparatus of claim 55, wherein the scan window comprises multiple electrophoresis lanes.

60. The program storage device of claim 21, wherein the method further comprises determining an integration time (ti) for the integrated signal (S); the calculating the

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velocity-normalized integrated signal (Sn) comprises dividing the integrated signal (S) by the integration time (ti); and the scan window comprises more than one channel.

61. The program storage device of claim 60, wherein determining the integration time (ti) comprises determining a start time (ts) at a start of the detecting the integrated signal; determining an end time (te) at an end of the detecting the integrated signal; and determining the integration time (ti) as a difference of the end time (te) and the start time (ts).

62. A program storage device readable by a machine, tangibly embodying a program of instructions executable by a machine to perform a method to scan a scan window comprising one or more channels, said method comprising:

detecting an integrated signal (S) across a scan window comprising one or more channels using an integrating detector;

determining an integration time (ti) for the integrated signal (S); and

calculating a velocity-normalized integrated signal (Sn), the calculating comprising dividing the integrated signal (S) by the integration time (ti).

63. The program storage device of claim 62, wherein determining the integration time (ti) comprises determining a start time (ts) at a start of the detecting the integrated signal; determining an end time (te) at an end of the detecting the integrated signal; and determining the integration time (ti) as a difference of the end time (te) and the start time (ts).

64. The program storage device of claim 63, wherein the method further comprises determining a detector offset (So); determining an offset adjusted unnormalized signal as the difference (S - So); and wherein the calculating the velocity-normalized

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integrated signal (Sn) comprises dividing the offset adjusted unnormalized signal by the integration time (ti).

65. The program storage device of claim 64, wherein determining the offset adjusted unnormalized signal further comprises multiplying the difference (S - So) by a scaling factor (tn).

REMARKS

Applicant has amended claims 9 and 17 of U.S. Patent No. 6,040,586, and has added new claims 26-65. In accordance with 37 C.F.R. § 1.173(c), Applicant has provided herein a table of exemplary support for the claim amendments and the new claims. Claims 1-65 are pending in the application.

TABLE OF EXEMPLARY SUPPORT

Claims	Exemplary Support for Claim Amendments/New Claims
9	E.g., col. 5, lines 27-29.
17	E.g., col. 3, lines 57-63.
26	E.g., col. 4, lines 45-47.
27	E.g., col. 3, lines 44-50.
28	E.g., col. 4, lines 27-36.
29	E.g., figure 1; col. 3, line 55 - col. 4, lines 2.
30	E.g., col. 3, lines 21-25.
31-65	E.g., col. 3, line 3 - col. 5, lines 55, such as col. 4, lines 33-36.

For the benefit of the Examiner, Applicant provides the following additional explanation related to the new independent claims presented in this Preliminary Amendment.

Claim 26 is based on previously issued claim 16, but broadens the claimed subject matter. Specifically, in contrast to claim 16, where the preamble recites "An

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apparatus for scanning a plurality of channels," the preamble of claim 26 recites "An apparatus for scanning one or more channels," as more specifically set forth in the claims. Support can be found throughout the specification and claims as originally filed, such as, for example, col. 4, lines 45-48, and original claim 17.

Claim 31 is related to previously issued claim 1. Claim 31 differs from claim 1 in that the preamble of claim 31 recites "A data collection method for scanning a scan window comprising," while the preamble of claim 1 recites "A data collection method for scanning a scan window comprising one or more channels comprising the steps of," as more specifically set forth in the claims. Claim 31 also includes the additional language "determining an integration time (ti) for the integrated signal." Claim 31 also differs from claim 1 as shown with underlining (additional text) and brackets (deleted text), as follows: "calculating a velocity-normalized integrated signal (Sn), [as a function of a scan velocity and the integrated signal S] the calculating comprising dividing the integrated signal (S) by the integration time (ti)," as more specifically set forth in the claims. Support can be found throughout the specification and claims as originally filed, such as, for example, col. 4, lines 27-36.

Claim 48 is related to previously issued claim 16. Claim 48 differs from claim 16 in that the preamble language "An apparatus for scanning a plurality of channels" of claim 16 is replaced with the language "An apparatus for scanning one or more channels," as more specifically set forth in the claims. Claim 48 also includes the additional language "means for determining an integration time (ti) for the integrated signal." Claim 48 also differs from claim 16 as shown with underlining and brackets, as follows: "computer means for receiving the integrated signal (S) and the integration time

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(ti), and for determining [a scan velocity and for calculating] a velocity-normalized integrated signal (Sn), [as a function of the scan velocity and the integrated signal S] the determining comprising dividing the integrated signal (S) by the integration time (ti)," as more specifically set forth in the claims. Support can be found throughout the specification and claims as originally filed, such as, for example, col. 4, lines 27-36.

Claim 54 is related to previously issued claim 17. Claim 54 differs from claim 17 in that the language "a scanner for effecting a scanning of" has been replaced with "a scanner configured to scan," as more specifically set forth in the claims. Claim 54 also includes the additional language "wherein an integrated signal (S) is detected by scanning the integrating detector relative to the scan window," and "a timer configured to determine an integration time (ti) for the integrated signal." Claim 54 also differs from claim 17 as shown with underlines and brackets, as follows: "a computer [for receiving] configured to receive the integrated signal (S) and the integration time (ti), and [for determining a scan velocity and for calculating] to determine a velocity-normalized integrated signal (Sn), the determining comprising dividing the integrated signal (S) by the integration time (ti)," as more specifically set forth in the claims. Support can be found throughout the specification and claims as originally filed, such as, for example, col. 4, lines 27-36.

Claim 62 is based on previously allowed claim 21. Claim 62 differs from claim 21 as shown with underlines and brackets, as follows: "A program storage device readable by a machine, tangibly embodying a program of instructions executable by a machine to perform a method [steps] to scan a scan window comprising one or more channels, said method [steps] comprising," as more specifically set forth in the claims. Claim 62 also

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includes the additional language "determining an integration time (ti) for the integrated signal (S)." Claim 62 also differs from claim 21 as shown with underlines and brackets, as follows: "calculating a velocity-normalized integrated signal (Sn), [as a function of a scan velocity and the integrated signal S] the calculating comprising dividing the integrated signal (S) by the integration time (ti)," as more specifically set forth in the claims. Support can be found throughout the specification and claims as originally filed, such as, for example, col. 4, lines 27-36.

Please grant any extensions of time required to enter this Preliminary Amendment and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

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Dated: February 14, 2002

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